EDITORIAL ARTICLES.

ON STIFFNESS AND TENDERNESS OF THE METACARPO-PHALANGEAL JOINT OF THE GREAT TOE, AND ON "HALLUX FLEXUS."

Attention has lately been called to this affection by Mr. Reginald Lucy, of Worcester,[1] since which many surgeons have hastened to express their views of it. Curiously, in the same number of the *British Medical Journal* which contained Mr. Lucy's communication, appeared an abstract of a paper by Mr. Davies-Colley on "Contraction of the Metatarso-Phalangeal Joint of the Great Toe." Some of the writers to subsequent numbers of the journal seem to assume that Mr. Lucy and Mr. Davies-Colley have described precisely identical conditions. That, however, is not the case, as may be easily seen on comparing the perfectly clear and even graphic descriptions given by Mr. Lucy with the equally distinct one by Mr Davies-Colley. The former entitles his contribution "Stiffness of the Great Toe in Male Adolescents." His cases, he says, occurred in boys soon after puberty. The symptoms complained of were, pain in the metararso-phalangeal joints of one or both great toes, with inability to dorsi-flex or hyper-extend the toe at the above joint, the attempt being accompanied by pain. The sufferers can flex the toe but cannot bend it upwards, and it remains stiff and fixed in a straight line with the sole. On manipulation of the affected toe or toes, there is pain referred to this joint, and some tenderness in the ball of the toe. No thickening of the joint ends or apparent hindrance to dorsi-flexion is present, while the other toes are painlessly mobile in both directions.

The patients are generally boys who have a great deal of walking and standing to do, with no history of injury, rheumatism or gout. An examination of their boots generally shows them to be short when the

[1] British Medical Journal, April 2, 1887.

weight of the body extends the foot longitudinally, while the vertical depth of the toe-cap appears to be less than the thickness of the terminal phalanges of the toe; the soles also were thick and stiff.

When one toe-joint is affected the patient limps in walking, dreading to raise himself on his toe, and so places the whole foot flat on the ground and lifts it again without bending it. But with the toes of both sides affected, the patient is crippled, and walks with great pain, after the manner of extreme double splay-foot. Errand and telegraph boys seem especially liable to this affection.

Mr. Davies-Colley describes[1] an affection which he terms "Contraction of the Metatarso-phalangeal Joint of the Great Toe." The abstract report given by the *British Medical Journal* states that Mr. Davies-Colley had been unable to find any description of this condition in surgical writings.

He had had five such cases under his care during the last nine years. The disease consisted simply of flexion of the first phalanx of the great toe through 30° to 60°, with extension of the second phalanx, and some swelling and stiffness of the metatarso-phalangeal joint. All the cases were in young men. It seemed probable that later in life the deformity tended to change to hallux valgus.

It is thus clear that Mr. Lucy is writing of a condition in which deformity is absent and Mr. Davies-Colley of one in which deformity is a striking feature. Mr. J. M. Cotterill[2] heads his contribution with the title of Mr. Lucy's paper and then devotes himself to critical remarks on Mr. Davies-Colley's, showing that the identity of the two conditions, or at least the fact that they are merely separate stages of the same disease, is in his mind so obvious as to need neither discussion nor proof. In this I do not at all agree with him. It is very possible that Mr. Lucy's disease (if I may so call it for the sake of convenience) is really only the early stage of Mr. Davies-Colley's; but no genuine proof whatever of this is furnished by anyone of the recent writers on this subject.

For my own part, of the six or eight patients who have applied to

[1]Clinical Society, March 25, 1887.

[2]British Medical Journal, May 25, 1887, p. 1158.

me professionally, complaining of symptoms similar to those sketched by Mr. Lucy, not one has had the downward flexion described by Mr. Davies-Colley; and of the cases in which I have noticed "Mr. Davies-Colley's disease" (I will call it so at present, because its most suitable name and true nature are disputed), not one has come under my treatment for the toe deformity, but for some other affection occurring in the foot or leg affected.

Mr. Davies-Colley is properly content with saying that it "seems probable" to him that his "hallux flexus," as he calls it, tends in later life to change to hallux valgus.

I write without knowing Mr. Davies-Colley's reasons for this opinion; and therefore I particularly wish to avoid being in the least positive when I state a different opinion. My views and the reasons for them are as follow. It is perfectly clear that both hallux valgus and hallux flexus must each have a beginning. Hallux valgus places the joint affected in a position which does not correspond to any which the normal movements of that joint permit. For instance, no normal movement permits the great toe to be adducted perceptibly at the metatarso-phalangeal joint. A small amount of adduction is possible when the joint is extended, but not enough to make it incorrect to say that early stages of hallux valgus strike the eye at once. Surely nearly every one of us must have seen hundreds of such cases. Many of us have only to look inside one or other of one's boots to find a great toe in a state of incipient hallux valgus, in most cases, thank goodness, never to get any worse.

But the conditions described by Mr. Davies-Colley and Mr. Lucy are comparatively infrequent.

Mr. Marsh speaks of having notes of twenty cases, and gives two specimens, of which one appears to be a case of chronic rheumatoid arthritis, pure and simple.[1] It is to beg the question of the nature of these affections to put obviously rheumatic cases into the same category with them. Mr. Cotterill saw three cases within a month. Another writer considers the affections in question to be so common and so easily cured by every surgeon endowed with common sense that he

[1] British Medical Journal, May 28, 1887, p. 1156.

writes as if outraged by having had the unworthy subject thrust beneath his eyes. Mr. Davies-Colley is surgeon to Guy's Hospital and has met with five cases in the last nine years.

It is, however, often possible to find tenderness of the metatarso-phalangeal joint of the great toe of persons with flat foot, *on inquiring for it.* But their spontaneous complaints are almost always directed quite elsewhere, namely to the front and outer side of the ankle.

Further, the beginning of hallux flexus must be more obscure, leaving subjective symptoms out of the question, than the beginning of hallux valgus because hallux valgus is only a fixation of a perfectly normal position into which every freely movable great toe can be placed with ease.

Davies-Colley's "hallux flexus" would, therefore, be exceedingly likely to begin with the symptoms of Lucy's "stiffness of the great toe joint."

But I confess I have never observed the transition, nor do the essays and letters before me furnish any evidence of it.

I can well believe, moreover, that some cases of hallux valgus may begin with pain and stiffness of the metatarso-phalangeal joint of the great toe. Nevertheless in the vast majority of such cases no such history can be obtained.

We come now to the question of *cause.*

There is a unanimous opinion that short boots form one essential factor of both stiff great toe and hallux flexus. Mr. Davies-Colley says his patients had abnormally long great toes. He did not think flat-foot had much to do with it. Mr. Cotterill is "convinced that most, if not all, typical cases are dependent upon a combination of flat-foot (or a tendency to it) with rigid and short boots. Flat-foot alone will not produce it; ill-fitting boots alone will not do so; it requires a combination of the two." He adds, "a short boot might perhaps set up irritation in the joint, but will not cause the disarrangement of parts peculiar to this disorder." A short boot is certainly capable of setting up "irritation within the joint," namely heat and tenderness and pain without any co-existent flat-foot. This I have seen more than once and cured by mere removal of the cause.

With regard to rheumatism, I think there can be no doubt that the cases described by Messrs. Lucy, Davies-Colley and Cotterill had nothing to do with it in their original causation. And there can, of course, be no doubt that true spontaneous rheumatic arthritis does occasionally attack the great toe joint.

But the question arises in my mind whether Lucy's disease, though itself originally a traumatism, pure and simple, has not, in cases in which it advances to the production of actual deformity, set up a pathological process identical with the rheumatic or rheumatoid changes which so frequently attack joints which have been bruised or fractured. Whether these constitute true rheumatism or not it will be easier to answer when it is known for certain what rheumatism is. Such pathological observations as haue been made (and will be noticed presently) support this view.

Mr. Marsh writes "the idea may appear fanciful—too fanciful, perhaps, to be discreetly put into print—but I have often thought that the condition is in some way connected with the development of puberty.

The cases are so strikingly alike, so strictly, in my experience, limited to patients between the ages of 12 and 20, and so frequently unaccompanied by any other joint affection, that they seem to constitute a specialised group depending on some common cause, and, vague as the suggestion may be, this cause seems in some way associated with the change to which I have alluded." Dr. Ord's observations on the association of osteo-arthritis with peculiarities and disorders of menstruation are then referred to.

Granting that a rheumatic or rheumatoid element does share in the pathology of this disease, it is possible that there may be something in the above hypothesis, though it is a little too vague to carry our knowledge much further.

Mr. Marsh "is not convinced" that short boots are the causes of the affection. It is to be noted that while he writes only in reference to Dr. Lucy's paper, his cases bear greater resemblance to those of Mr. Davies-Colley, whom he does not mention. In both the cases he describes in detail, tne point of the great toe was slightly directed downwards; there were distinct changes in the bones and great rigidity.

Sir Dyce Duckworth thinks that were such affections as hallux flexus really caused by bad boots they would be more common. He inclines to suspect a constitutional origin.

Passing on to the question of pathology and anatomy, Mr. Davies-Colley, who has treated some of his cases by excision, "usually found," we are told, that "the cartilage had lost its pearly lustre, was thin, and the ligamentous tissue was thickened." Mr. Charters Symonds states that in one case which he had examined, both cartilages were fibrous and partially removed; the bone was not exposed. The changes were those of rheumatic arthritis"

These anatomical descriptions exactly tally with what might be expected from examination during life. The joint can sometimes be distinctly felt to have lost the perfect smoothness of its natural movements. Osteophytic growths, and slight, real or apparent, osseous thickenings are sometimes distinguishable around the margins of the joint. I am speaking now of cases whose symptoms correspond to Lucy's description; but, when hallux flexus is plainly present, the above physical changes are still more marked.

Lastly comes the most important question of *treatment*. As usual, the writers differ most of all on this. The one point upon which there is universal agreement is that the boots shall be of proper size and shape.

Mr. Lucy has had partial success, but only partial, from "painting the joint with iodine, and ordering a longer boot with higher blocked toes, as much rest as possible being also enjoined.

With regard to the treatment of hallux flexus, Mr. Davies-Colley in some cases divided the inner band of the plantar fascia and the short muscles of the sole about three-quarters of an inch behind their insertion into the sesamoid bones and first phalanx. These cases were for the time cured, but one returned in two years in a still worse condition as regards flexion, with some outward displacement in addition; in fact, in an incipient state of hallux valgus. In this case a good result had followed resection of the metatarso-phalangeal joint.

In two other cases he had excised the proximal half of the first phalanx, leaving the head of the metatarsal bone, with the sesamoid

bones, and interfering as little as possible with the attachments of the muscles. Primary union had followed and the patients were soon able to walk upon the flat sole. In one of them, twenty-two months after the operation, there was no appearance of deformity, and the patient had walked twenty miles without any difficulty the day preceding.

Mr. Cotterill, who takes for granted the assumption that tenderness and stiffness of the metatarso-phalangeal joint of the great toe is the first stage of the condition of contraction and deformity described by Mr. Davies-Colley, says that he "has never failed to cure any case of early disease (that is, before ankylosis) by taking proper means to support the instep." It is, therefore, clear that this very success must have prevented him from observing the transition of such a condition as that described by Mr. Lucy into "hallux flexus."

"In more advanced cases," where the pain is severe and swelling considerable, fomentations, rest, gentle support with slight splints," etc., are recommended by Mr. Cotterill as a preliminary to treating the flat-foot.

Upon the whole, judging by my own experience as well as by the opinions of others, I believe "fomentations, gentle support with light splints," etc., to be a waste of time. With regard to treating every case of stiff great toe as one of flat-foot, neither I nor anyone else but Mr. Cotterill seems to have tried the plan. This surgeon would reserve excision for cases of firm ankylosis. But, in how many of these cases is there really firm ankylosis? Why, even in the cases which have been excised, the cartilages though thinned, were not wholly removed.

Turning now to Mr. Marsh, he appears to have tried upon these toe cases nearly every conceivable remedy, exclusive of operations, ever thought of for treating chronic joint disease. And he does not state definitely that he once succeeded. No wonder then that he describes treatment as "unsatisfactory."

I remember, about five or six years ago, showing Mr. Marsh a case presenting such symptoms as those described by Mr. Lucy. Mr. Marsh informed me that it was a condition which had attracted the attention of Sir James Paget, who had tried a variety of remedies, es-

pecially leather splints, without curing his patients. I told Mr. Marsh, speaking from experience, that I should cure my patient with plaster of Paris, and I did. Mr. Marsh now writes: "In one case I kept the toe fixed in Plaster of Paris for three months. Complete rest, however, has appeared to be of very slight benefit."

In studying the effects of treatment, it is of no use to lump all painful affections of the metatarso-phalangeal joint of the great toe together. This joint, small as it is, deserves the same respectful mode of consideration as the hip and the knee-joint. No one would expect fixation to cure such a case as Mr. Marsh's Case II; and even his Case I may have gone too far for such treatment. But when very little thickening of the joint ends exists and manipulation discovers little or no injury to the cartilages, then, according to my experience of half a dozen cases so treated, plaster-of-Paris gives excellent results. But the case must be properly applied by some one who realizes that skill and practice are required in so simple a matter as making a plaster splint. It should also extend upwards as far as the instep. It should also be everywhere absolutely rigid. I have frequently seen (in the case of larger joints), gentlemen, watching the effects of plaster cases as soft and supple as thin leather in critical parts of their extent.

But marked symptoms of chronic rheumatoid arthritis, accompanied by deformity, are not to be *cured* by fixation of any kind. They may, however, be relieved by it.

On the other hand, mere contraction may, as Mr. Davies-Colley's cases show, be successfully treated by subcutaneous division of contracted soft structures.

Finally, an advanced class of cases remains in which the amount of deformity and the extent of rheumatoid changes in the joint can only be thoroughly dealt with by excision either of the joint or of the proximal end of the first phalanx.

Final Remarks. There are some points I should like to refer to before concluding this paper. Firstly, it has been stated by several gentlemen that the conditions above described are confined to the male sex, and commence only in youth. I am certain that the female sex are sometimes affected, and I believe that one of my cases, a gen-

tleman aged 40, who, (though an old friend of mine, never walked lame or complained to me until about three years ago), developed a stiff metatarso-phalangeal joint long after boyhood. I have written to him on the subject and await his answer.

With regard to sex, a young lady was sent to me about three years ago by Mr. C. H. Taylor, late House Physician to the West London Hospital, and she suffered from a stiff and tender metatarso-phalangeal great toe joint. I put on a plaster of Paris case, but, as it caused a slight soreness of the skin, it had to be removed. The patient was shortly afterwards pursuaded to try a surgeon, who manipulated and exercised her joint and condemned rest. I saw Mr. Taylor last week, and he tells me that she is no better.

When it is absolutely necessary for this lady to move about in order to obtain some important object; she can, as it were, temporarily walk the stiffness and tenderness off, and remain for hours on her feet. But her case is not one of pure hysteria, by any means.

Some young women with flat feet will also confess to tenderness of the metatarso-phalangeal joint of the great toe, if they are asked.

The tender spot in most cases is, I believe (I am writing from memory, not from written notes) towards the outer side of the dorsal aspect of the joint, just beneath the tendon of the extensor proprius pollicis. Mr. Cotterill has also remarked that the tenderness is on the dorsal aspect. Mr. Lucy refers it to the ball of the great toe. Was there a callosity or corn developing there?

It is curious that affections so important, so interesting and sometimes so difficult to cure should not have been hitherto described in text-books. The fact is that writers of text-books of moderate size are the very opposite of anxious to enlarge each edition by introducing descriptions of newly observed conditions of less than the first importance. Mr. T. S. Ellis, of Gloucester, who some years ago recommended systematic exercises as a treatment of flat-foot, perhaps it should rather be said as *the* treatmeat for it, is of opinion that all deformities of the great toe can and should be dealt with on similar lines.[1] He goes so far as to write: "Given sufficient patience and

[1]British Medical Journal, May 27, 1887, p. 1,157.

determination, and it is surprising how bad a condition may be removed, and *perfect recovery of outline* and of function attained by these means alone." [The italics are mine.] I have used for years, and still continue to use Mr. Ellis's exercises in the treatment of flat-foot, and have pleasure in bearing witness to their value as a means of removing pain and weakness, but as for *recovery of outline*, all I have observed leads me to congratulate the people of Gloucester on the supernatural patience and determination" they must possess if Mr. Ellis's impressions are correct.

One word more with regard to all appliances for the treatment of affections of the toes. The impossibility of getting the boot ordinarily worn by the patient, to contain them, makes him often disinclined to wear them until a stage has been reached in which mere appliances are scarcely enough to cure him.

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WITZEL ON INJURIES OF TENDONS AND THEIR TREATMENT.

A very complete study of the injuries of tendons and their proper treatment has been made by Dr. Oscar Witzel,[1] and we give a brief résumé of his views. The greater part of injuries of tendons are complicated with wounds, and yet isolated cases of subcutaneous rupture of tendons do occur. Witzel thinks that there is always some pathological change in the tendon in these cases. A previous tendo-synovitis may cause the infiltration of the tendon with serum, the tendon may be partly worn and ravelled in hydrops of the sheath, or reduced to a third or a quarter of its diameter in hydrops with lipomatous degeneration of the sheath.

The actual rupture may be caused by vigorous muscular action, but it is probably more frequently due to over-extension of the tendon and its usually weakened muscle. Hence in every case of sprain of a joint the examination should be sufficiently thorough to exclude this injury. The situation of the rupture can be detected by the finger, feeling the step-like gap between the ends of the tendon, as after tenotomy, the

[1] Ueber Sehnenverletzungen und ihre Behandlung, Volkmann's Sammlung klin. Vortraege No. 291.